

A STUDY ON LATE QUATERNARY SEDIMENTATION OF GÖKOVA BAY, SOUTHWESTERN TURKEY

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Abstract

The late Quaternary sedimentation of Gökova Bay continental shelf has been analysed based on high resolution seismic reflection profiles. The development of the sediment accumulation on the shelf is controlled by the glacio-eustatic sea level changes and tectonic movements.

Keywords: *Aegean Sea, Sedimentation, Sea level, Tectonics*

Introduction

The Gökova Bay is located in the southwestern Turkey that surrounded by Bodrum Peninsula to the north and Datça Peninsula to the south. Due to the N-S oriented tectonic opening in the western Anatolia, large graben structures have been originated. Aegean graben system generally consists of a large number of blocks limited to E-W oriented normal faults. Evolution of the east-west-trending Gökova Graben structure is related to the north-south extension of the Aegean segment of the Aegean-Anatolian Microplate. The region in general is under the influence of a NNE-SSW oriented shrinkage regime [1, 2]. During the Early-Middle Miocene period thick volcano sedimentary associations were formed within approximately NS trending fault-bounded continental basins under an E-W extensional regime [1].

least 30 km since the last glacial period. The Holocene sediment thickness is up to 50 m on the continental shelf. The sedimentation rate varies between 0.3 and 0.46 g cm⁻²yr⁻¹ in the eastern Gökova Bay [3]. This high sedimentation rate is primarily caused by terrestrial inputs from Azmak River that discharges into the eastern part of the Bay.

Discussion

The previous sea-level studies indicate that the Gökova Basin is subsiding at 0.3–0.4 mm/year by determining the sedimentary sequences [4]. The active faults recognised in the seismic sections support the tectonic movement in the region. The stratigraphic analysis and the observed tectonic features indicate that the deltaic sedimentation is mainly controlled by glacio-eustatic sea level changes and vertical tectonic movement in the Gökova Bay.

References

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Fig. 1. (a) Tectonic map of the Aegean and western Turkey showing the major tectonic structures (modified from [2]- [3]) (b) The location of the study area, (c) Geological map of Gökova and Hisarönü region [4].

Material and Methods

This study is based on high-resolution single channel airgun and 3,5 kHz seismic reflection profiles acquired during the cruise performed at Gökova Bay by the RV K.Piri Reis. The late Quaternary sedimentary and tectonic framework of continental shelf was recognized by analysis of seismic data.

Results

The location of the paleo-shoreline in the last glacial maximum was determined on the seismic reflection profiles using the principles of sequence stratigraphy. A marine transgression occurred and the shoreline moves toward to the east at